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ABSTRACT

Set forth in the booklet are the national apprenticeship and training standards for the training of lithographers, photoengravers, gravure workers, bookbinders, and finishers as developed and recommended by the Graphic Arts International Union in cooperation with the Bureau of Apprenticeship and Training, U.S. Department of Labor. The objective of the standards is to provide a common basis for the mutual undertaking of training which will benefit employers, employees, and the public. Their purpose is to improve the quality and opportunity of craft workers through the establishment of uniform training programs. In addition to itemizing the various provisions of the national standards, the booklet contains an explanation of the application of the standards for the guidance of employers and labor representatives. (Author)

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National Apprenticeship and Training Standards for the Graphic Arts International Union



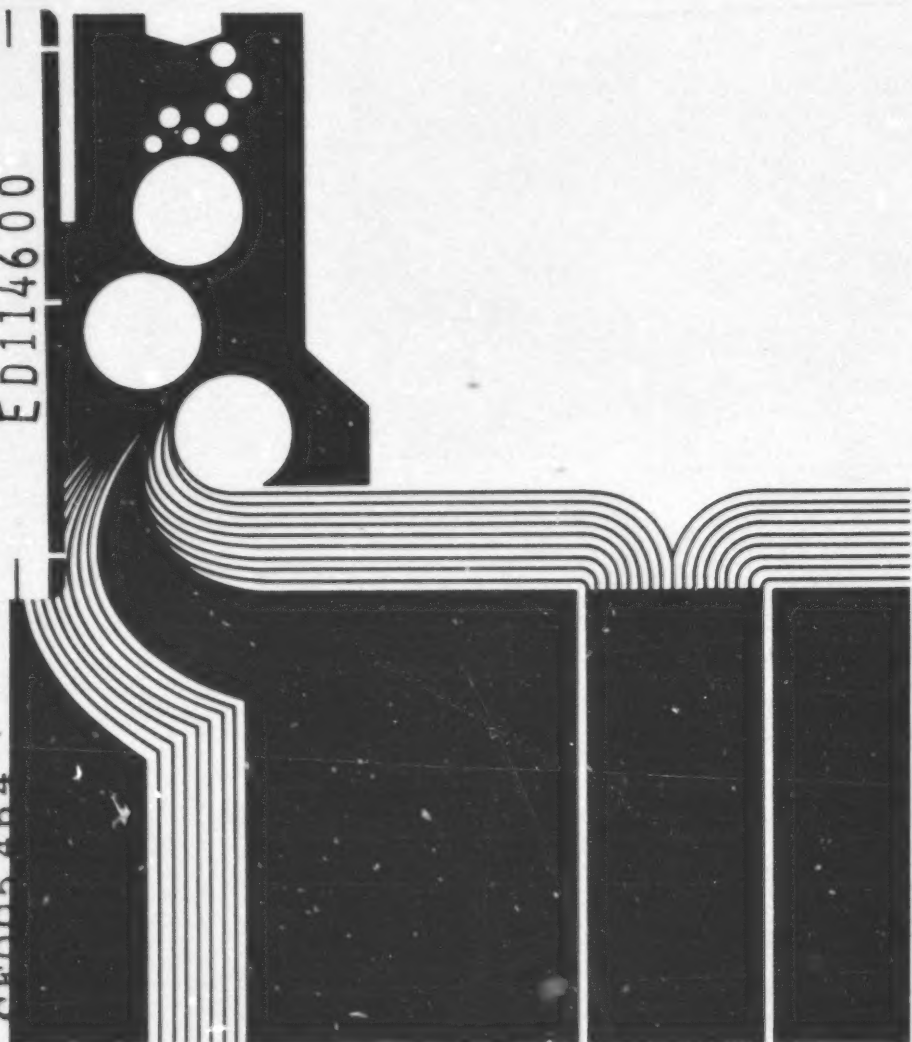
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PREFACE

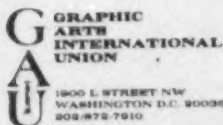
Set forth in this booklet are the national apprenticeship and training standards for the training of lithographers, photoengravers, gravure workers, bookbinders, and finishers as developed and recommended by the Graphic Arts International Union in cooperation with the Bureau of Apprenticeship and Training, U.S. Department of Labor.

It is the sincere conviction of the sponsor that through the concerted effort of management and labor joint committees, and all those concerned with the development of craft workers in the trade, full use will be made of these national standards in setting up, conducting, and improving local apprenticeship programs. The objective of the standards is to provide a common basis for the mutual undertaking of training which will redound to the benefit of employers, employees, and the public.

With the rapid introduction of new methods, increase in technical knowledge, and use of highly sophisticated equipment, it is necessary to keep local apprenticeship programs under constant review for the purpose of keeping them current.

It is the hope of the national sponsor that these standards will be considered in the spirit in which they were developed. Their whole purpose is to improve the quality and opportunity of craft workers through the establishment of uniform training programs.

In addition to itemizing the various provisions of the national standards, this booklet contains an explanation of the application of the standards for the guidance of employers and labor representatives.



TO: All Locals of the Graphic Arts International Union

It has been our opinion that there should be Federal Standards that would cover the graphic arts classifications which the Graphic Arts International Union represent. The security of our members depends to a great extent on the certainty that their skills are current and in conformity with the best possible procedures that are available to workers in the graphic arts. It is hoped that a well written set of uniform standards will serve to upgrade the state of the art in the numerous locals of the GAIU.

It is our intention that this document be a living one which can and will be modified to accommodate the impact of technology which so radically affects our lives today. We are aware of the fact that it will be necessary for many of the locals to adjust these standards so as to comply with state requirements. To accommodate this, it is recommended that the locals work with their Joint Apprenticeship Committee. In those areas where the J.A.C. does not exist, it is strongly recommended that an attempt be made to establish one.

We have been assured of the cooperation of the Bureau of Apprenticeship and Training in the meaningful application of these standards. It is our hope that these standards will serve as significant guidelines for all workers regardless of classification in the industry which we all serve.

Fraternalty yours,

Kenneth J. Brown
International President

KJB:pr
opeiu-2/afl-cio

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**NATIONAL APPRENTICESHIP AND TRAINING STANDARDS
FOR THE GRAPHIC ARTS INDUSTRY
FOR LITHOGRAPHY, PHOTOENGRAVING, GRAVURE,
BOOKBINDING, AND FINISHING**

I. PROVISIONS OF STANDARDS GOVERNING THE EMPLOYMENT AND TRAINING OF APPRENTICES.

NOTE: Local application of these national apprenticeship standards in States having State apprenticeship agencies may require adaptation to meet the standards of apprenticeship in such States. The staffs of the Bureau of Apprenticeship and Training, U.S. Department of Labor, and State apprenticeship agencies are available to advise on such standards.

1. Definitions

"Employer" means a person, company, corporation, or firm by whom the apprentice is employed.

"Union" means any local union affiliated with the Graphic Arts International Union (GAIU).

"Local committee" means the local shop or area joint apprenticeship committee representing the union and the employer(s) responsible for the operation and administration of the local apprenticeship program.

"Apprentice" means a person at least 18 years of age who has signed an apprenticeship agreement with an employer to learn a craft covered by these standards.

"Apprenticeship agreement" means the written agreement between the apprentice and the employer, with approval by the local shop joint apprenticeship committee, or the agreement between the apprentice and the local area joint apprenticeship committee. All apprentices shall be registered with the appropriate registration agency. The agreement shall contain a statement making the local standards of apprenticeship a part of the agreement.

"Registration agency" means the Bureau of Apprenticeship and Training, U.S. Department of Labor, or a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training.

"National Committee" means the National Apprenticeship and Training and Education Committee representing the Graphic Arts International Union.

"Local apprenticeship program" means the standards of apprenticeship developed by the employer jointly with the union or an area

joint apprenticeship committee and registered with the registration agency.

"Coordinator of apprentices" means the person assigned by the local shop or area joint apprenticeship committee to perform the duties and functions as stated in the standards of apprenticeship.

"Standards" means this entire document, including these definitions.

2. National Apprenticeship and Training and Education Committee

The National Committee shall act as a service and advisory organization on all matters of apprenticeship, training, and education within the graphic arts industry. It shall be the policy of the National Committee to promote and give guidance in the operation of local joint apprenticeship programs.

The National Committee shall be composed of the members of the Technological Developments and Education Committee, and the GAIU Director of Education shall serve as Special Advisor to the Committee.

A national representative of the U.S. Department of Labor's Bureau of Apprenticeship and Training shall serve as consultant to the National Committee.

The extent of authority vested in the National Committee shall be limited to that authorized by the Graphic Arts International Union. The committee shall determine the time and place of meetings. Among its duties, the committee shall:

- a. Endeavor to keep the national apprenticeship standards under constant study with respect to their effectiveness and applicability to the changing needs of the crafts and to make such recommended changes for improvement as studies indicate.
- b. Recommend establishing local shop or area committees to operate in accordance with these national standards.
- c. Promote the development and use of practical sources of related instruction.
- d. Improve and maintain good public relations by:
 - (1) Holding and publicizing completion ceremonies.
 - (2) Preparing news releases and articles relating to apprenticeship.
 - (3) Participating in multistate and State apprenticeship conferences.

- (4) Promoting the craft's national apprenticeship standards through personal appearances and other means at important management meetings.
- e. Cooperate at the national level with all agencies whose activities are related to apprenticeship, and especially with the Bureau of Apprenticeship and Training, U.S. Department of Labor, and participate in meetings of the national apprenticeship directors sponsored by management and labor.
- f. Maintain a complete file of information on local shop or area joint apprenticeship programs. This file shall include:
 - (1) Names and locations of individual shop or area joint apprenticeship committees.
 - (2) The number of apprentices in training in each program.
 - (3) The number of apprentices completing each year.
 - (4) The extent to which individual shop and area joint apprenticeship committees perform their functions consistent with these national apprenticeship standards.
- g. Publish an annual report on apprenticeship activities of the Graphic Arts International Union.
- h. Advise and assist local shop or area joint committees in complying with the affirmative action program contained in their standards.

3. Qualifications for Apprenticeship

Applicants for apprenticeship must be at least 18 years of age. The local joint apprenticeship committee will have the authority to set a maximum age limit. Where a maximum age is established, it must be stated in the local program.

Applicants shall be high school graduates, or possess a certificate of equivalency, and must be physically able to perform the work of the craft. The method of determining ability will be stated in the local program. Local committees may establish additional qualifications as desired or deemed necessary. Such qualifications must be specific, clearly stated, and directly related to job performance.

4. Selection of Apprentices

The recruitment, selection, employment, and training of apprentices during their apprenticeship shall be without discrimination because of race, color, religion, national origin, or sex. The sponsor will take affirmative action to provide equal opportunity in

apprenticeship and will operate the apprenticeship program as required under title 29, Code of Federal Regulations, chapter XIV, part 1604, Guidelines on Discrimination Because of Sex, as amended April 5, 1972, as contained in addendum 4.

In addition to establishing qualification standards, each local program sponsor employing five or more apprentices will be required to develop and adopt an affirmative action plan, which shall include goals and timetables if analysis indicates underutilization of minorities, and shall adopt a selection method consistent with the requirements of title 29, CFR, part 30, as amended.

A local program sponsor with a program in which fewer than five apprentices are indentured is required only to adopt the equal opportunity pledge stated at the beginning of this section.

A sample selection procedure and affirmative action plan and Guidelines on Discrimination Because of Sex are included in these national standards. (See addendum 4.)

5. Credit for Previous Experience

When the apprentice has had previous experience in the craft, the local committee shall evaluate such experience in accordance with the upgrading credit guidelines in addendum 5 of these standards. The committee shall grant appropriate credit toward the completion of apprenticeship, subject to review before the end of the probationary period. Apprentices who receive credit for previous experience shall be paid the wage rate for the period to which such credit advances them.

6. Wages

It is recommended that the schedule of wages for apprentices be established on a percentage of the prevailing local journeyman's wage rate (starting rate to be no less than 60 percent and increased each 6 months to completion of the apprenticeship).

The apprentice wage schedule will be stated in each local program.

7. Apprenticeship Agreement ^{1/}

The apprentice (and if a minor, the parent or guardian) shall sign an apprenticeship agreement with the local committee, acting as agent of the employer; or the agreement may be between the

^{1/} Some State apprenticeship agencies require the use of their own apprenticeship agreement forms. In such instances, the agreement forms may be obtained from the staffs of either the State apprenticeship agencies or the Bureau of Apprenticeship and Training, U.S. Department of Labor.

apprentice and the local shop joint apprenticeship committee.

The agreement shall contain a statement making the terms and conditions of the local standards a part of the agreement.

8. Ratio of Apprentices to Journeymen

The ratio of probationary apprentices and apprentices to journeymen shall be in conformity with existing local bargaining agreements established between the employer and the union. Such ratio shall be stated in the local program.

9. Probationary Period

All apprentices shall be subject to a probationary period as contained in the local labor agreement. In the offset press and feeder departments, this period shall be 6 months. In all other departments in lithography, commercial photoengraving, newspaper photoengraving, and gravure, this period shall be 1 year. In bookbinding and finishing, it shall be 90 days.

During the probationary period, the local committee may cancel an apprenticeship agreement at the request of either party by notifying the other. After the probationary period, the local committee may cancel the agreement after adequate cause has been shown and all parties to the agreement have had an opportunity to be heard. The registration agency shall be notified of all cancellations and terminations of apprenticeship agreements.

10. Term of Apprenticeship

In all branches of lithography and commercial photoengraving (with the exception of the offset press, feeder, web press packer, and helper departments), the term of apprenticeship shall be 5 years.

In the offset press and feeder departments, the term of apprenticeship shall be 4 years.

In the web press packer and press helper departments, the term shall be 2 years. Journeyman web press packers and press helpers shall receive 2 years' credit toward apprenticeship in the feeder department.

In bookbinding and finishing, the term of apprenticeship shall be as follows:

For the following classification and skills, 4 (or 5) years:

Journeyman I

Set up and/or operate cutting machines (all types), folding machines (all types), gathering machines, inserting machines, stitchers and trimmers, side sewing machines, varnishing machines,

glueing machines, smashing machines, rounder and backer machines, lining-up machines, casing-in machines, jogging machines, building-in, board cutting, cloth cutting, slitting, case making, stamping (ink blank or metal), hi-die cutting, die making, die cutting, marble edging, staining, gilding, book repairing, collating machines, carbon processing machines, laminating, plastic binding machines, indexing machines, maintenance machinist, machine mechanic, head shipper, head sheet stock man, mailing machines (others), perfect binding machines, paperback machines, all small machines (set-up) such as, but not limited to, punching, perforating, sewing machines, stitchers, spiral binding machines, round cornering, and other small machines used in bindery operations.

For the following classification and skills, 2 (or 3) years:

Journeyman II

Loaders on folding machines, feeding pockets on stitchers or inserters, feeding-gathering machines, collating machines, lining-up machines, case-in machines, single stitching machines, perforating machines, tipping machines, stripping machines, hand inserting-outserting, pasting, collating, lay-up-make, layouts, labeling, cleaning covers, boxing-on folders, putting parts together, and all other operations similar to or associated with any of the above.

11. Hours of Work

The hours of work for apprentices shall be the same as those for journeymen of the craft who are employed in the same shop as prescribed under the existing local bargaining agreement. Apprentices absent from the services of their employers through their own fault shall make up all such lost time before being advanced to the next period of apprenticeship.

No apprentice shall work without the supervision of a journeyman.

12. Supervision of Apprentices

The employer shall designate a person in the shop, who may be a foreman, journeyman, or shop steward, who, with the advice and assistance of the local joint committee, shall be responsible for the apprentices' work experience on the job, for their attendance at related classes, and for the recording of same on record forms provided for this purpose. (See addendum 3.)

It shall be this person's duty to see that these record forms are

complete in every detail and forwarded to the local committee at periodic intervals. The local committee shall keep a master record of the apprentices' work experience and related instruction.

13. Coordinator of Apprenticeship

Where the local shop program of apprenticeship or the area of coverage of the local area program is unusually large, the local committee shall give consideration to the appointment of a coordinator of apprenticeship to assist it in the supervision and administration of the apprenticeship program.

The coordinator of apprenticeship shall be responsible to the local committee and assume such duties as may be assigned. In effect, the coordinator of apprentices acts for and on behalf of the local committee during the interim between regular meetings of the committee to assure the effectiveness and success of the local program.

14. Apprentice Identification Card

The apprentice shall carry an identification card signed by the head of the local committee. This card shall also designate the apprentice's current wage rate.

15. Apprentice Master Record Card

A master record of the apprentice's work experience and related instruction shall be kept by the local committee. This information shall be furnished by the apprentice from his daily work record and by the local school authorities, where appropriate, from their related instruction records. The record card and all data pertaining to the apprenticeship shall be the property of the local joint committee and shall be accessible to the local sponsoring organizations at all times. (See addendum 3 for apprentice recordkeeping.)

16. Examination of Apprentices

The local committee shall examine the work and related instruction records of apprentices at periodic intervals in order to determine their progress. In the event that an apprentice is not making satisfactory progress, the committee shall ascertain the cause and endeavor to correct any deficiencies.

Should the committee find that the apprentice cannot satisfactorily complete the apprenticeship, due to lack of aptitude and/or attitude, then the agreement may be terminated.

17. Accident Prevention

Apprentices shall receive indoctrination on accident prevention and safe working habits during their entire term of apprenticeship. Such instruction shall be coordinated with the actual work being performed on the job and with the equipment being used.

18. Related Classroom Instruction

Apprentices shall be required to attend classes in subjects related to the trade for at least 144 hours per year, each year of apprenticeship. Hours spent in related instruction shall not be considered as hours of work nor will apprentices receive pay for time spent unless required to attend courses during their normal working hours, or unless payment is required by State law.

The local committee may recommend journeymen in the trade who have the knowledge and ability to teach related classroom instruction.

Where it is found impracticable to establish related instruction classes, the local committee may substitute other organized forms of instruction such as correspondence courses, in the theoretical subjects related to the trade.

No apprentice should be allowed to work overtime when such work will interfere with attendance at related instruction classes. In case of failure of any apprentice to fulfill the obligations as to school attendance and conduct, without due cause, the local joint committee shall take necessary disciplinary action.

19. Work Experience

During their apprenticeship, apprentices shall be taught the use, care, and effective safe handling of all tools and equipment commonly used in the trade. They shall be given work experience and training in all branches of their chosen craft to assure them the skill and proficiency that characterize a fully qualified and competent craft worker versed in the theory and practice of the trade. The apprentice shall also perform such other duties in the shop and on the job as are commonly related to such apprenticeship. (See sample work processes in addendum 1.)

20. Continuity of Employment

It shall be the responsibility of the employer to provide, insofar as possible, continuous employment for all apprentices. In the event it becomes necessary to reduce the number of apprentices employed because of lack of work, or in order to maintain the prescribed ratio established, apprentices shall be laid off in reverse order to that in

v.hich they were employed. Apprentices so terminated shall be given priority for reemployment before new or additional apprentices may be employed.

21. Adjustment of Differences

In the event differences arise regarding the operation or interpretation of the local apprenticeship programs, either party to the apprenticeship agreement may appeal to the local joint committee for settlement of such differences.

The registration agency may be consulted by either party to the apprenticeship agreement for an interpretation of any provision of the standards over which differences occur.

22. Modification of Standards

These national apprenticeship standards may be modified at any time by the Graphic Arts International Union. Before becoming effective, such modifications shall be submitted to the Bureau of Apprenticeship and Training, U.S. Department of Labor, for approval and registration.

Local apprenticeship standards may be amended at any time by a two-thirds vote of the local committee, subject to approval by the sponsoring employers and union. Such amendments shall not alter apprenticeship agreements in effect at the time of such change without the express consent of all parties to such agreement. All amendments to the local program shall be registered with the appropriate agency.

23. Relationship of Apprenticeship Standards to Bargaining Agreement

Nothing in the local programs shall be interpreted as being contrary to or in conflict with the present or subsequent bargaining agreements.

24. Certificate of Completion of Apprenticeship

When apprentices have successfully completed their apprenticeship, the local committee shall recommend to the registration agency that the apprentice be presented a certificate of completion of apprenticeship and shall affix its signature thereon.

II. ADAPTING NATIONAL STANDARDS TO LOCAL USE

It is recommended that a local committee be established, equally representative of management and labor and selected by the groups they represent, to be responsible for the administration and coordination of the local joint apprenticeship program. If more than 10 percent of the plant's employees are women or more than 10 percent of the local's members are women, at least one woman shall serve on the local committee.

It shall be the duty of each local committee to identify its area of operation and to assume responsibility for the training of all apprentices by area shops with whom the local union has bargaining agreements. The local committee shall also encourage all other employers in the area to employ and train apprentices under its apprenticeship program and any shop or plant who desires to do so may participate in the local program by signifying agreement to the terms and conditions of training prescribed in the local standards.

1. Duties of the Local Joint Apprenticeship Committee

The local committee shall develop local apprenticeship standards consistent with these national standards and covering such items as:

- a. Provision for adequate funding of its program through its local collective bargaining agreement.
- b. Method of selecting apprenticeship applicants on a non-discriminatory basis.
- c. Schedule of work experience on the job.
- d. Provision for supplemental related instruction.
- e. Progressively increasing schedule of wages for apprentices.
- f. Provision for instructions in safe working habits and accident prevention.
- g. Provision for reviewing or testing the apprentice's progress, both on the job and in related instruction.
- h. Provision for adjusting complaints regarding apprenticeship.
- i. Procedure for providing apprentices with certificates of completion.

It shall also be the responsibility of the local committee to:

- a. Conduct surveys to determine the need for apprentices in the local area and their availability.
- b. Ascertain whether the employer undertaking the training of

apprentices has the necessary facilities to assure effective training.

- c. Place each apprentice under agreement. Where the apprentice is indentured, the local committee shall make every effort to keep him continuously employed and assure him of well-rounded training and experience in all phases of the trade. Where the apprentice is indentured, and the employer is unable to provide employment for him, the local committee shall exert every effort to place him with another employer.
- d. Assure that apprentices are receiving the necessary on-the-job experience and related technical instruction.
- e. Conduct the final examination for apprentices to establish their status as journeymen in the trade.
- f. Notify the appropriate registration agency of all terminations and cancellations of apprenticeship agreements.
- g. Prepare and submit all reports concerning its apprenticeship program that may be legally required by local, State, or Federal agencies and the respective national organizations.
- h. Supervise the enforcement of all the provisions of the standards.

Local committees, when unable to adequately perform the above duties and responsibilities on a voluntary basis because of the size of the program or other contributing factors, should give consideration to the appointment of a coordinator of apprenticeship to assist in the supervision and administration of their program.

2. Responsibilities of Apprentices

The local committee should impress upon each indentured apprentice that, in signing the apprenticeship agreement, he has voluntarily agreed to abide by the provisions of the local program. The committee should inform the apprentices of their responsibilities and obligations under the apprenticeship program, as follows:

- a. To perform diligently and faithfully the duties assigned by the local committee and the employer in accordance with the provisions of the standards.
- b. To respect the property of the employer and abide by the working rules and regulations of the employer, union, and local committee.

- c. To attend regularly and complete satisfactorily the required courses of related instruction as provided under the local program.
- d. To maintain such records of work experience and training received on the job and in related instruction as may be required by the local committee.
- e. To develop safe working habits and conduct themselves in their work in such manner as to assure their own safety as well as that of their fellow workers.
- f. To work for the employer to whom assigned to the completion of the apprenticeship, unless reassigned to another employer or the agreement is terminated by the local committee.
- g. To conduct themselves at all times in a creditable, ethical, and moral manner, realizing that much time, money, and effort will be spent in affording them an opportunity to become skilled craft workers.

3. Official Approval

Before becoming operative, local apprenticeship standards must have the official approval of the local sponsoring employers and the union and be registered with the appropriate registration agency. Consultants to the committee should attend meetings only upon request of the committee, advise the committee on problems affecting the agency they represent, and provide assistance which will aid in improving the apprenticeship and training programs.

FEDERAL LAWS AND REGULATIONS AFFECTING THE EMPLOYMENT OF APPRENTICES

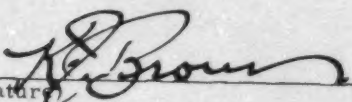
WAGE AND HOUR REGULATIONS (Ruling Concerning Payment for Time Spent by Apprentices in Related Instruction). The Fair Labor Standards Act requires that each employee, not specifically exempted, who is engaged in interstate commerce or in the production of goods for such commerce receive the statutory minimum wage, and that no employee (including apprentices) may be employed for more than 40 hours a week without receiving at least time and one-half of his regular rate of pay for the overtime hours.

As an enforcement policy, time spent in an organized program of related supplemental instruction by apprentices working under bona fide apprenticeship programs may be excluded from working time if the following criteria are met: (1) The apprentice is employed under a written apprenticeship agreement or program which substantially meets the basic standards of the Bureau of Apprenticeship and Training, U.S. Department of Labor, and (2) such time does not involve production work or performance of apprentice's regular duties.

If the above criteria are met, the time spent in such related supplemental training shall not be counted as hours worked unless the written agreement specifically provides that it is hours worked. The mere payment or agreement to pay for time spent in related instruction does not constitute an agreement that such time is hours worked.

OFFICIAL APPROVAL

Kenneth J. Brown, President

 President
(Signature) (Title)

October 29, 1973

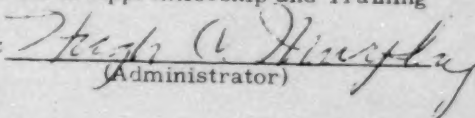
(Date)

Graphic Arts International Union
1900 L Street, N.W.
Washington, D.C. 20036

Registered as incorporating the basic standards
recommended by the Bureau of Apprenticeship
and Training, U.S. Department of Labor

Bureau of Apprenticeship and Training

By:


(Administrator)

November 19, 1973

(Date)

Registry Number: N-90073

ADDENDUM 1

SAMPLE WORK PROCESSES FOR ON-THE-JOB TRAINING

**Camerasman - Color [Lithography, Photoengraving,
and Rotogravure]**
(Trade)

5 Years
(Term)

History development and nature of photography
Theory of light
Means and methods of controlling light
Photographic developing processes
Darkroom and camera gallery
Operating procedures
Camera equipment, layout
Decorating and storage schemes
Zeroing in new camera equipment
Camera light source technique
Contact frame and camera back techniques
Quality control tools
Register systems for camera and contact frame
Halftone photography for gravure, photoengraving,
and lithography
Halftone screens
Special halftone techniques
Direct halftone color separation
Halftone enlargers
Halftone by enlargers
Halftone ranges
Continuous tone black and white photography
Theory and techniques of color separation photography
Development and exposure of color separation material
Color correction
Masking systems
Scanner color separations (familiarization)
Partial camera adjustments
Mechanical devices for color separation
Electronic accessory devices
Color job analysis

Dot Etcher [Litho]
(Trade)

5 Years
(Term)

Familiarization of camera

Dot Etcher [Litho] (Continued)

Light, color theory, and color reaction
Halftone tints
Use of trade tools and chemicals
Masking, staging, etc.
Color correction continuous tone films
Color correction screened halftones
Intensification and blackening
Chemistry and application of reduction of dot structure
Prepress proofing
Familiarization of platemaking
Familiarization of press work

**Retouchers [Gravure]
(Trade)**

**5 years
(Term)**

Basics of all rotogravure branches
Judgment of negatives
Set up monotone and line negatives
Set up color negatives and flash line work
Application of dye on negatives for reducing tone values
Cyaniding negatives for increasing tone values
Opaquing and outlining of all white paper
Air brushing and vignetting with dye and India ink
Staging of negatives for color separation and tone value
The use of film overlays
The use and action of chemicals
The use of densitometer for photographic range
Checking screen and tone positives for exact reproduction
and dot value
Local dyeing
Elimination of all spots and bad edges with spotting brush
and etching tools
Grinding of negatives and positives
Study of tone value by scale
Thorough study of color and its application
Basic study of art and composition

**Proofer [Photoengraving]
(Trade)**

**5 Years
(Term)**

Major printing processes
Operation and maintenance of presses

Proofer [Photoengraving] (Continued)

- Care of rollers
- Manufacture and characteristics of paper
- Manufacture and characteristics of ink
- Use of overlays and underlays
- Checking proofs with copy
- Single color proofing
- Color proofing and ink sequences
- Registering plates on and off the block
- Ink matching
- Proofing of process color plates—mounted and unmounted with bearers
- Making and using friskets and masks
- Basics of etching, finishing, and final printing

**Stripper - Printers [Photoengraving]
(Trade)**

**5 Years
(Term)**

- Major printing processes
- Fundamental knowledge of all branches of photoengraving
- Knowledge and use of trade equipment and tools
- Copy evaluation
- Negative assembly
- Color stripping
- Pin register systems
- Mixing solutions
- Preparation of plate metals
- Coating and whirling of metals
- Prints on metals
- Developments of exposed metal plates
- Drying and burning of coating
- Photography, copper etching, and zinc etching basics

**Stripper and Opaquer [Litho]
(Trade)**

**5 Years
(Term)**

- Major printing processes
- Basic mathematics
- Drafting and art practices
- Tools of trade
- Copy preparation and evaluation
- Layouts
- Imposition and major bindery methods

Stripper and Opaquer [Litho] (Continued)

Camera (basics)
Contacting—types of film
Film developing
Basic stripping knowledge (opaquing, overlays, etc.)
Advanced stripping knowledge (process color work)
Platemaking (basics)
Prepress proofing
Press (basics)

Stripper - Layout [Rotogravure]

5 Years

(Trade)

(Term)

Major printing processes
Basics of all rotogravure branches
Fundamental mechanical drawing
Basics of bookbinding and papercutting
Study of imposition in cylinder laying
Study of type setting and composition
Type styles study
Basics of gravure presses and folding units
Knowledge and use of retouching tools
Primary colors
Layouts
Type and tone positives in forms
Bronze proofs and register color work

Printer - Transferer [Rotogravure]

5 Years

(Trade)

(Term)

Basics of all rotogravure branches
Preparing and sensitizing solutions
Preparing and sensitizing carbon tissues
Tone values in black and white and color positives
Care of lights and printing frames
Cutting and mounting carbon tissue
Complete knowledge of transfer machine in its structure
and operation
Printing of positives on carbon tissue
Laying of carbon tissue on copper cylinder after
printing
Developing of carbon tissue on cylinder
Burner usage
Preparation of copper cylinders for transfer

Stager [Rotogravure]
(Trade)

5 Years
(Term)

Basics of all other rotogravure branches
Recognition of tone panels and vignettes
Knowledge and use of trade tools
Spot out cutlines and imperfections
Related chemicals and their reactions
Study ruling pen and its use
Usage of straight edge on cylinder
Paint out all dead metal
Check cylinder for correct imposition
Spotting
Stage for reetching

Platemaker [Litho]
(Trade)

5 Years
(Term)

Major printing processes
Camera (basics)
Layout and stripping (basics)
Related physics and chemistry
Lithographic plates, basic principles and functions
(graining, coating, etc.)
Deep-etch plates and their purpose
Surface plates (predominately presensitized plates)
Special plates (multimetal)
Plate exposures and equipment
Plate developing
Photo composition operations and layouts
Press (basics)

Zinc Etchers [Photoengraving]
(Trade)

5 Years
(Term)

Major printing processes
Knowledge and use of trade equipment and tools
Judging negatives
Preparation of plate for etching
Preparation of acid for etching
Checking prints to determine satisfaction for etching
Painting up solids and dead metal
Application of topping powder
Burning in, painting, and cooling of zinc plates

Zinc Etchers [Photoengraving] (Continued)

Use of etching machine
Etching in tub and machine-line, halftone, and Ben Day
Scum removal
Polishing plates
Painting up for dropouts
Reetching
Making zinc halftones
Burning in and etching combination copper plates
Color work
Basics in other photoengraving branches

**Copper Etchers [Photoengraving]
(Trade)**

**5 Years
(Term)**

Major printing processes
Knowledge and use of trade equipment and tools
Mixing acid baths and chemicals and their applications
Preparation of plates
Flat etching
Electric etching
Powderless etching of copper
Staging
Deep etching
Color etching
Basics in other branches of photoengraving

**Etcher [Rotogravure]
(Trade)**

**5 Years
(Term)**

Basics of all other rotogravure branches
Chemistry relative to the trade and its application
Checking prints before etching
Spotting (final)
Correct evaluation of carbon prints (whether contrasty,
flat, etc.)
Correct evaluation of tone values of both monotone and
color etching
Study of correct depth in etching so that screen wall
does not break down in press
All types of resist other than carbon tissue
Methods of saving cylinders partially etched
Safety

Router-Blocker [Photoengraving]
(Trade)

5 Years
(Term)

Major printing processes
Knowledge and use of trade equipment and tools
Planing blocks
Routing zinc
Beveling and lining plates
Making tint blocks
Routing copper, brass, and other alloys
Patching various plates
Mounting line and halftone plates
Assembling plates on blocks
Squaring and trimming blocks planing for type high
Soldering and patching
Basics of etching finishing

Finisher [Photoengraving]
(Trade)

5 Years
(Term)

Knowledge and use of trade tools
Checking etched plates with original copy
Trimming line plates
Repairing damaged plates
Removing imperfections from halftone plates
Trimming copper and zinc plates
Burnishing
Removing enamel from plates
Outlining
Draw tooling and ruling
Using screen tools and cross liners
Vignetting
Transferring and cutting for register
Reengraving
Finishing color process plates to various publication standards
Basics of photography, etching, and proofing

Finisher [Rotogravure]
(Trade)

5 Years
(Term)

Basics of all other rotogravure branches
Knowledge and use of trade tools

Finisher [Rotogravure] (Continued)

- Repairing of damaged cylinders or plates
- Basic principles of etching and proofing
- Correcting all imperfections on plates or cylinders
- Making transfers for corrections
- The principles of reetching
- Application of resist for reetching
- Relating tone value by depth
- Matching tones with roulettes
- Buffing of copper for tone value
- Bridging screen wall to prevent bleeding of inks
- Use of silver filling and cold lead filling
- Thorough knowledge of press work, oscillation, and knife damage to cylinder
- Develop ability to engrave letters and numerals freehand
- Spot and tool cylinder before press

**Cylinder Plater and Grinder [Rotogravure]
(Trade)****5 Years
(Term)**

- Basics of all other rotogravure branches
- Chemistry relative to the trade and its application
- Knowledge and use of trade equipment and tools
- Placing copper node in tank for recoppering
- Checking and filling holes in cylinders using silver or lead fillings before plating
- Checking sulphuric acid in porous diaphragm
- Checking cylinders before and after they are plated
- Checking current for right thickness of copper to be plated on cylinder
- Checking position of polishing paper before polishing cylinders and learning proper grade of polishing paper to be used
- Pressure adjustments on polishing head for polishing cylinder
- Proper cylinder storage
- Layout of cylinders for color job by using micrometer
- Different grades of carborundum and finishing stones for grinding out imperfections in cylinders that have been damaged
- Adjusting necessary speeds and automatic feeds for applying pressure on stones
- Basing plate cylinder to build it up to proper size

Press Feeder [Litho]**4 Years**

(Trade)

(Term)

Handling paper for press

Press washup

Press maintenance

Installation and removal of press rollers

Preparation and application of fountain solutions,
press chemicals, and inks*Care of blanket*

Press plates (handling, removal from press, storage, etc.)

Press feeder operation and maintenance

Pressman [Litho]**4 Years**

(Trade)

(Term)

Major printing processes

Camera, stripping, platemaking (basics)

Pressroom health and safety

Instruction in mechanical operation of press

Manufacture and characteristics of paper

Manufacture and characteristics of ink

Chemistry related to presswork

Fundamentals of printing and paper

Set press for job (grippers, guides, stops, spray, etc.)

Lock on plates and set register

Set ink fountains and rollers

Adjust water fountains and rollers

Color matching

Densitometry

Care and control of press plate while running

Supervision of press on single color work

Supervision of press on multicolor work

Production on multicolor press under supervision

Bookbinder**5 Years**

(Trade)

(Term)

Layout for bindery processing

Paper and stock handling

Folding machine operations

Automatic inserting, stitching, and trimming machine

Perfect bookbinding, gathering machine, and paper
covering machine

Bookbinder (Continued)

- Sewing and stitching machine operation
- Gluing operation—hand and machine
- Cutting machine operation, flat and three-knife
- Punching, round cornering, indexing, scoring and perforating machine operations
- Backing, headbanding, lineup operations—hand and machine
- Casing-in, building-in operations—hand and machine
- Stock-cutting, case-making, heat-sealing—hand and machine
- Case stamping, silk screen operations
- Gilding operation—hand and machine
- Office and business forms operations
- Maintenance of bindery equipment

THE SAMPLE WORK PROCESSES DESCRIBED ABOVE ARE ONLY EXAMPLES OF THE MORE PREDOMINATE CLASSIFICATIONS IN THE GRAPHIC ARTS INDUSTRY. DUE TO DIFFERENT TECHNOLOGY, MATERIALS, AND TECHNIQUES, THERE ARE MANY MORE CLASSIFICATIONS TO WHICH THE GRAPHIC ARTS INTERNATIONAL UNION CLAIMS JURISDICTION BUT HAS NOT OUTLINED IN THESE SAMPLE WORK PROCESSES FOR ON-THE-JOB TRAINING.

ADDENDUM 2

RELATED INSTRUCTION AND RECOMMENDED REFERENCE BOOKS

This addendum consists of an example of a related training outline that is used by apprentice cameramen in the Graphic Arts International Union. It is typical of others like it that are available to local apprenticeship training programs.

The formal training manuals available from GAIU form the basis of a reference library that can be augmented by many sources that include but are not limited to graphic arts industry associations, manufacturers, suppliers, and research agencies.

CAMERA COURSE OUTLINE [LINE]

Project 1 - Photography and Printing

PHASE A - HISTORY OF PHOTOGRAPHY

- A. Introduction
- B. Camera Obscura
- C. Photochemical Observations
- D. Photographic Processes
- E. Important Independent Inventions
- F. Special Sensitivity
- G. Modern Film Supports
- H. Special Graphic Art Emulsions

PHASE B - PRINTING PROCESSES

- A. Historical Introduction
- B. Printing Today

Project 2 - Understanding the Process Camera

PHASE A - THE FRONT BOARD

PHASE B - THE BACKBOARD - THE COPYBOARD AND THE LIGHT

SOURCE

- A. Introduction
- B. The Back Case
- C. The Copyboard
- D. Light Source

Project 2 (Continued)

PHASE C - LENS AND IMAGE SIZE

- A. The Lens
- B. Optical Problems of Simple Lenses
- C. Lens Correction for Optical Problems
- D. Optical or Lens Flare
- E. The Scaling and Focusing of the Image
- F. Movement of the Camera Parts

Project 3 - Camera Area and Darkroom

PHASE A - CAMERA AREA - CAMERA BACK, ENLARGER, AND CONTACT DARKROOMS

- A. Camera Area (Light Room)
- B. Camera Back Darkroom
- C. Lights
- D. Contact Frame Darkroom
- E. Enlarger Darkroom

PHASE B - CHEMISTRY AND DEVELOPMENT AREA

- A. Processing Sink
- B. Trays
- C. Chemistry Preparation Area
- D. Drying
- E. Storage

Project 4 - Cleaning and Maintenance of the Camera and Darkroom

- A. Cleaning and Maintenance of the Lens Board
- B. Cleaning and Maintenance of the Backboard
- C. Cleaning and Maintenance of Bellows
- D. Cleaning of Camera Bed and Tapes
- E. Care and Cleaning of Light Source
- F. Care and Cleaning of the Copyboard
- G. Care and Cleaning of Darkroom and Equipment
- H. Caring for Camera Equipment
- I. Cameraman's Safety Rules

Project 5 - Photographic Films - Structure and Color Sensitivity

- A. Structure of Photographic Film
- B. Dimensional Stability
- C. Color Sensitivity
- D. Film Speed
- E. Latitude
- F. Grain

Project 6 - Development of the Image

- A. Introduction
- B. The Development Process
- C. Automatic Film Processors
- D. Maintenance Program
- E. Problems Incurred During the Developing Process
- F. Chemistry of Development

Project 7 - Copy Evaluation and Preparation

- A. Evaluating Copy
- B. Scaling Copy to Size
- C. Copy Identification
- D. Grouping Together by Type and Size
- E. Setting up Copyboard
- F. Care of Copy

Project 8 - Shooting Line Copy

PHASE A - SCALING AND FOCUSING

- A. Relationship of Copy Plane to Center of Lens to Focal Plane for Size Determination
- B. f Number Setting for Reduction or Enlargement
- C. Covering Power of Lens
- D. Use of Tapes and Scales
- E. Focusing on Ground Glass

Project 8 (Continued)

PHASE B - SHOOTING LINE COPY - SAME SIZE

(Work Project)

- A. Set Lens Board to Same Size
- B. Adjust Lamps
- C. Focus Copyboard
- D. Set Aperture
- E. Set Timer
- F. Place Film on Vacuum Back and Zoning
- G. Expose - Determining Exposure by Using Photometer
- H. Remove Film - Careful of Static
- I. Set Up Developer in Tray
- J. Develop Film - Effect of Time and Temperature
- K. Squeegee Dry
- L. Evaluate

PHASE C - REDUCTION AND ENLARGEMENT

(Work Project)

- A. Advantages of Reduction or Same Size Reproduction
- B. Set Camera to Reproduction Size
- C. Adjust Lamps
- D. Exposure Computation
- E. Determining the Coverage Area of Lens Based on Coverage Angle
- F. Use of Fine Line Developer to Develop Extreme Reductions

Project 9 - Separating Color

(Work Project)

- A. Hold Color - Delete Color
- B. Handling and Loading Panchromatic Film
- C. Including Filter Factor in Exposure Determination
- D. Development

Project 10 - Problem Copy [Poor Contrast Copy]

(Work Project)

- A. Setting Up Copy with Control Guides

Project 10 (Continued)

- B. Use of Yellow Filter to Increase Contrast
- C. Determining Aperture and Exposure
- D. Development
- E. Chemical Assists in Obtaining Results from Problem Copy
- F. Contacting the Image Back and Forth to Increase Contrast

Project 11 - Fine Line Copy

PHASE A - REFLECTION COPY

(Work Project)

- A. Definition of "Fine Line Copy"
- B. Setting Up of Copy
- C. Aperture
- D. Focusing
- E. Test Exposures to Determine Correct Exposure
- F. Masking
- G. Still Development
- H. Fine Line Development

PHASE B - HALFTONE LINE REDUCTION - REFLECTION AND TRANSMISSION READINGS

(Work Project)

- A. Limitation of Reductions Determined by Final Ruling Size
- B. Focusing Scale Used as Aid to Determine New Screen Ruling
- C. Filters Used to Reproduce Printed Sheet
- D. Effect of Size Change on Contrast
- E. Use of Fine Line Developer

Project 12 - Contacting Line and Halftone

PHASE A - CONTACTING PROCEDURE

- A. Contacting
- B. Essentials in Contacting
- C. Contacting Procedure (Step by Step)

PHASE B - CONTACTING HALFTONES AND CONTROLS

- A. Control Guides and Their Uses

Project 12 (Continued)

- B. Holding Dot Values
- C. Reversal Films

PHASE C - COMBINING IMAGES

- A. Pin Systems
- B. Combining Two or More Images
- C. Shooting In and Shooting Out

PHASE D - SPREAD AND SHRINK

- A. Function of Spreads and Shrinks
- B. Guides
- C. Methods of Making Spreads and Shrinks
- D. Factors Determining Amount of Spread or Shrink

Project 13 - Illumination

- A. Measurement of Light
- B. Intensity of Illumination
- C. Reflection and the Copyboard
- D. Even Lighting of Copyboard
- E. Types of Light Reflectors

CAMERA COURSE OUTLINE [TONE]

Project 1 - Introduction to the Halftone

- A. Why Halftone Photography
- B. History of Halftone (Highlights Only)
- C. Basic Function of the Screen
- D. Halftone Dot and Printed Sheet Characteristics
- E. Screen Rulings and Their Use

Project 2 - Halftone Screens

PHASE A - GLASS SCREEN

- A. Structure
- B. Types
- C. Theories of Halftone Formation Realized by Using Glass Crossline Screen
- D. Care and Cleaning of the Glass Screen

PHASE B - DYE IMAGE SCREENS

- A. Structure
- B. Types
- C. How Halftones are Formed
- D. Care and Cleaning of Dye Image Screen

Project 3 - Tone Reproduction

- A. Definition of Tone
- B. Copy Tone Reproduction

Project 4 - Using the Densitometer

PHASE A - DENSITOMETRY

- A. Tone Measurement
- B. Taking Measurements

PHASE B - OPERATIONAL SETUP FOR REFLECTION AND TRANSMISSION READINGS

- A. Introduction
- B. Design of Units

Project 4 (Continued)

- C. Operating the Densitometer
- D. Zeroing in Reflection Head
- E. Zeroing in Transmission Probe
- F. Readout for Transmitted or Reflected Densities
- G. Zeroing to Clear Film
- H. Reading Areas of Control
- I. Film Dry Down

PHASE C - CONTROL GUIDES AND MAINTENANCE

- A. Introduction
- B. Control Guides
- C. Checking of Instrument During Use
- D. Care of the Instrument
- E. Yellowing of Gray Scale
- F. Maintenance

Project 5 - Photographic Films

PHASE A - TONE REPRODUCTION AND SENSITOMETRY

- A. Tones
- B. Film Contrast
- C. Characteristic Curve
- D. Reciprocity Law and Reciprocity Failure

PHASE B - PLOTTING A CHARACTERISTIC CURVE

- A. Make a Step Exposure Scale
- B. Plot Characteristic Curve
- C. Determine Gamma as Affected by Development Time

Project 6 - Halftone Dot Sizes

- A. Related to Gray Scale
- B. Determining Values Visually
- C. Integrated Halftone Reading with Densitometer

Project 7 - Halftone Screening (Magenta)

- A. Screen Range

Project 7 (Continued)

- B. Expanding or Compressing Screen Range
- C. Machine Development
- D. Determining Filter Factors for CC Filters as Related to Screen, Film, and Light Source

Project 8 - Exposure Computers

- A. Introduction
- B. Measurement of Exposures
- C. Intensity of Light Units
- D. Combination Units
- E. Use of the Slide Rule
- F. Enlarger Applications of Computers

Project 9 - Halftone Screening - Magenta

(Work Project)

- A. Set Up Gray Scale in Copyboard
- B. Focus Camera Same Size
- C. Set Aperture for Normal f Stop
- D. Position Film
- E. Position Screen

Project 10 - Halftone Screening - Magenta

(Work Project) SHOOTING BLACK AND WHITE COPY, WITH GRAY SCALE

- A. Determine Range of Copy
- B. Set Up Copy with Gray Scale
- C. Effect of Poor Screen Contact
- D. Effect of Still or Cold Development

Project 11 - Halftone Screening - Other Screens

- A. Gray Screen
- B. Auto Screen Film
- C. Elliptical Dot Screen

Project 11 (Continued)

- D. Respi-Dual Dot Screen
- E. Specialty Screens

Project 12 - Halftone Screening - Glass

- A. Screen Ruling and Tone Values -
- B. Relationship of Lens Aperture to Dot Formation
- C. Focusing with the Glass Screen
- D. Setting Screen Parallel to Ground Glass Using Calibrated Wedge
- E. Setting Screen Distance
- F. Special Diaphragms for Varied Dot Formations
- G. Water House Stops

Project 13 - Halftone Screening - Glass

(Work Project) SHOOTING GRAY SCALE

Project 14 - Screen Angles

PHASE A - DETERMINING THE SCREEN ANGLE

- A. Moire and Rosette
- B. Reading the Angle
- C. 45° Angle (Key)
- D. Combination Angles
- E. Angle for Magenta When Using Elliptical Dot
- F. Screen Angle Finder

PHASE B - ANGLING THE SCREEN

- A. Glass Screen
- B. Dye Image Screen

Project 15 - Halftone Screening - Duotone

(Work Project) USING SCREEN ANGLING

- A. Screen Angles
- B. Preparation of Copy-Register Marks
- C. Shooting the Primary Negative
- D. Shooting the Secondary Negative
- E. Variations

Project 16 - Halftone Screening - Shooting Flat Tints

- A. Problems Encountered in Making Screen Tints
- B. Suggested Changes from Normal Procedure
- C. Common Faults of Screened Tints
- D. Development

Project 17 - Dropouts [Highlight Mask]

- A. Films and Developers Used
- B. Best Aperture
- C. Use of Supplemental Line Exposure
- D. Other Methods

Project 18 - Rescreening Halftones

(Work Project)

- A. Use of Negative or Positive
- B. Setup of Screen Copy
- C. Angling of Screen for Rescreening
- D. Breaking of Screen Pattern
- E. Focusing
- F. Development
- G. Complications of Process Job

Project 19 - Reproducing Color Prints in Black and White

- A. Use of Gray Screen
- B. Film
- C. Yellow Filter

Project 20 - Continuous Tone as Intermediate Step in Rescreening

(Work Project)

INTRODUCTION - WHEN AND WHY USED

- PART 1. PROCEDURE FOR SHOOTING THE CONTINUOUS TONE
- PART 2. PROCEDURE FOR SHOOTING THE HALFTONE POSITIVE

CAMERA COURSE OUTLINE [COLOR]

Project 1 - Nature of Color

- A. Electromagnetic Spectrum
- B. The Eye and Color

Project 2 - Color Blindness

- A. Types of Color Blindness
- B. Theories
- C. Tests for Color Blindness
- D. Simulated Color Blindness

Project 3 - Additive Color

- A. Primaries - Red, Green, Blue
- B. Additive Combinations

Project 4 - Subtractive Color

- A. Transmitted Color
- B. Reflected Color
- C. Primary Subtractive Color
- D. Inks

Project 5 - Graphic Organization of Color

- A. Color Wheel
- B. Munsell Color Tree
- C. Color Charts

Project 6 - Customer's Copy and Its Care

- A. Reflective Copy
- B. Transparent Copy
- C. Care of Copy

Project 7 - Preproduction Evaluation and Preparation of Copy for Camera

- A. Preproduction Evaluation

Project 7 (Continued)

- B. Preparation of Copy for Camera

Project 8 - Densitometry - Taking Readings from Silver and Transparent Images

- Use of Density Measurements

Project 9 - Color Separation

- Color Vision and Color Reproduction

Project 10 - Why Color Correction

- A. Correction for Inks
- B. Correction for Paper
- C. Imperfections in Customer's Copy

Project 11 - Evaluation of Process Inks

- A. Importance of Ink Valuation for Color Correction
- B. Information Needed for Proper Color Correction
- C. Making Ink Measurements
- D. Relating Information to Color Correction Needed

Project 12 - Color Separation of Reflected Copy

(Work Project)

PHASE A - MAKING THE BASIC COLOR SEPARATION

- A. Set Up Copy Control Patches - Size and Focus
- B. Contrast and Range Requirements
- C. Materials Used
- D. Making the Separation Negatives
- E. Making Color Corrected Highlight Masks with the Primary Filters

PHASE B - MAKING THE POSITIVE CORRECTION MASKS

- A. Determining Mask's Strength
- B. Materials Used
- C. Contacting Procedure
- D. Illustration Showing Proper Mask and Separation
- E. Evaluation of the Combinations

Project 13 - Tone Reproduction and Gray Balance

- A. Picture Quality and Tone Reproduction
- B. Three-Color Gray Balance

Project 14 - Correctors

PHASE A - COLOR CORRECTORS

- A. Single Premask
- B. Multiple Premask
- C. Under Color Removal Masks

PHASE B - TONE CORRECTORS

- A. Highlight Masks
- B. Multiple Highlighters
- C. Deficiencies
- D. Flesh Tone Masks
- E. Reasons for Occasional Hand Correction on Masks

Project 15 - Color Separation of Transparency - by Contact Silver Masking Method

(Work Project)

- A. Light Source
- B. Take Densitometer Readings and Relate to Gray Scale
- C. Determine Mask Strength
- D. Set Up Copy—With Control Patches—Cut Out Windows
Transparency Size
- E. Making the Principal Masks
- F. Making the Separation Negatives

Project 16 - Other Masking Methods

- A. Two-Stage Masking
- B. Silver Masking Camera Back
- C. Masking with the Enlarger

Project 17 - Copy Color Analysis

PHASE A - COLOR BREAKDOWN

- A. Color Analysis

Project 17 (Continued)

- B. The Color Breakdown
- C. Use of the Color Chart
- D. Comparing Color with the Copy
- E. Copy Color Related to a Remembered Color

PHASE B - THREE - COLOR COMBINATION

- A. Introduction
- B. Gray Balance
- C. Percent Value of Three-Color Values to Determine Gray Balance
- D. Color Balance
- E. Percent Values of Three-Color Values to Determine Color Balance
- F. Evaluation of Colors
- G. Three-Color Combination

PHASE C - THE ROLE OF BLACK

- A. The Role of Black
- B. Types of Black
- C. Black Combined with Color
- D. Black as a Color
- E. Determining Black Value
- F. Black and Under Color Removal

Project 18 - Specially Handled Shot

- A. Line Shots
- B. Outliners and Knockouts

Project 19 - The Scanner

PHASE A - DESIGN CONCEPTS

- A. Introduction
- B. The Three Main Operational Units
- C. The Input Stage
- D. Design Concepts for Signal Corrections
- E. Output Stage

PHASE B - THE COMPUTER

- A. Introduction
- B. Operational Control
- C. Control Patches
- D. Machine Setup
- E. Gray Scale to Developed Density Line
- F. The Functions of the Computer
- G. Inverter

Project 20 - Separation Evaluation

- A. General Evaluation
- B. Tone Evaluation of Separations
- C. Gray Balance Evaluation

Project 21 - Direct Screening

- A. Equipment
- B. Materials Used
- C. Order of Exposure
- D. Procedure With the Gray Screen
- E. Procedure with the Glass Screen
- F. Processing
- G. The Black Printer Negative
- H. Evaluation of Screened Negatives

Project 22 - Other Color Processes

- A. Fake Color Jobs
- B. Fake Color Separation Art (Overlay)
- C. Fake Color Separations (Opaque)
- D. The Bourges Process
- E. Two-Color Jobs from Four-Color Art

Project 23 - Copy Reproduction Problems

- A. Hard to Reproduce Colors in Copy
- B. Long Range Reflection Copy

Project 23 (Continued)

- C. Poor Copy and Retouched Copy
- D. Customer's Requirements

Project 24 - Conversions and Duplicate Negatives

- A. Rescreens from Screened Copy
- B. Line Enlargements and Reductions from Negatives Crona-Press on Scotch Prints
- C. Letterpress to Offset
- D. Offset to Gravure
- E. Gravure to Offset
- F. Duplicate Negatives

Project 25 - Color and Tone Correction by Contacting

PHASE A - ALTERATION OF HALFTONE DOT SIZES BY EXPOSURE

- A. Reduction of Dot Sizes
- B. Increasing Contrast
- C. Reducing Contrast

PHASE B - SELECTIVE ALTERATION

(Work Project)

- A. Determining Correction Procedure
- B. Contacting for Color Alteration

Project 26 - Prepress Color Proofing

- A. Use
- B. Types

Project 27 - Dot Etching and Intensifying

- A. Dot Structure
- B. Chemistry of Reduction
- C. Reducers
- D. Application of Reducer
- E. Dot Density
- F. Intensification

ADDENDUM 3

Apprentice Recordkeeping

To maintain a current record of the progress and ability of apprentices, an accurate recordkeeping system, covering the pertinent points, is essential. A number of different types of recordkeeping systems are in use in the different areas. Some systems include a variety of recordkeeping forms—daily, weekly, monthly—as well as a final master chart summarizing the pertinent data recorded during the entire term of apprenticeship.

Reproduced on the following pages are a simply designed recordkeeping form and a control report. They are presented as examples in establishing your own recordkeeping system. The recordkeeping form covers a 1-month period and is accumulative.

It will be noted that the data recorded during each 1-month period is carried forward to the next period. In this way, a current and complete record of the progress of each apprentice may be kept on this single form.

Samples of other recordkeeping systems may be obtained upon request through the field representatives of the Bureau of Apprenticeship and Training or State apprenticeship agencies.

MONTHLY WORK REPORT

		MONTH _____ 19__												
		(WORK PROCESSES)												TOTAL
HOURS														
Carried Forward														
Date	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	9													
	10													
	11													
	12													
	13													
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	22													
	23													
	24													
	25													
	26													
	27													
	28													
	29													
	30													
	31													
TOTAL														

APPRENTICE RECORDKEEPING REPORT

Apprentice	Address	City
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Employer	Address	City
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Month	Year 19	Employer or foreman verify and sign here										Give location of job above	
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Total hours required	I	II	III	IV	V	VI	VII	VIII	IX	X	Related instruction	
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SCHEDULE												Hours of related instruc- tion	Supervisor's verification
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Hours carried forward													
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Date													
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Monday													
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Tuesday													
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Wednesday													
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Thursday													
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Friday													
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Monday													
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Tuesday													
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Wednesday													
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Thursday													
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Friday													
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Make comments or remarks on progress of apprentice on reverse side.

Enter grand total here

ADDENDUM 4

Graphic Arts International Union Affirmative Action Program

I. PROGRAM

The GAIU skilled craft apprenticeship programs have for many years served vital needs of employers, unions, and the public. These programs have been the source for highly qualified craft workers and have provided employers with a resource of supervisory and management candidates. The apprenticed craft workers, because of their high degree of training and skills, are one of our most valuable assets. The maintenance of the quality of our apprenticeship programs has enabled us to institute improvements to keep our apprenticeship programs current with technological changes and to make the public aware of the continued excellent quality of our products upon which we pride ourselves.

II. POLICY

To recognize and reward talent and meritorious service on the basis of factors other than skill and performance is unfair to employees, impairs morale, and encourages inefficiency—all of which are detrimental to the efficient operation of our industry and contrary to the equal employment policy of the Graphic Arts International Union. The only factor to be considered in the hiring and promoting of employees is their ability to do the job well; therefore, the employer will hire and promote the applicant who appears to be the best qualified candidate available without regard to race, color, religion, national origin, or sex.

III. ADMINISTRATION

All phases of this affirmative action program will be administered by the National Apprenticeship and Training Committee, Graphic Arts International Union. Carefully selected union personnel will be assigned equal employment opportunity responsibility to insure the implementation and success of the GAIU's affirmative action program. In addition, all other union personnel will cooperate and assist in implementing this program at their particular level.

IV. OPERATION

All presently registered local joint apprenticeship programs shall be amended to include the equal opportunity pledge contained in

title 29, Code of Federal Regulations, part 30.3(b), and title 29, chapter XIV, part 1604, concerning discrimination because of sex.

All requests for registration of new apprenticeship programs with the appropriate registration agency, i.e., BAT/SAC, regardless of location, size, or craft(s) covered, shall include the same pledge described above and guidelines on discrimination because of sex.

Presently registered local joint apprenticeship programs having four or fewer apprentices, though not required to adopt a selection procedure or an affirmative action program under the regulation (CFR 29, part 30) will make available, upon request, a copy of these apprenticeship standards and part 1604, Guidelines on Discrimination Because of Sex, and the local committee's apprentice affirmative action plan to the BAT/SAC representative responsible for servicing the apprenticeship program.

Requests for registration of new local joint apprenticeship programs employing four or fewer apprentices will also make available the information and materials described above.

V. AFFIRMATIVE ACTION

(For Programs Employing Five or More Apprentices)

The GAIU recognizes that there are two separate areas requiring affirmative action:

1. Upgrading of women already in the industry to journeyman I status;
2. Insuring equal opportunity to all interested applicants for entry into the industry through its local joint apprenticeship programs.

Recognizing that the lowering of GAIU standards for the selection, training, and promotion of apprentices would seriously jeopardize the quality of its skilled craft workers, and of the products traditionally associated with the union, the GAIU therefore recommends the following action to meet the above two problems:

A. Notification of Apprenticeship Opportunities

1. For upgrading to Journeyman I, the local committee shall disseminate notice of apprenticeship opportunities at least 30 days prior to the earliest date of application in the following manner:
 - a. Internal Notification
 - (i) Notify all employees by posting a notice and/or by direct communication that it will be accepting

applications for specific skilled craft apprentice positions. Included as part of the notice and/or direct communication shall be the recommended credit for work experience contained in addendum 5;

- (ii) Solicit referrals from women employees in the plant.

b. External Notification

The local committee will, when internal notification fails to produce an adequate number of applicants:

- (i) Advertise existing or expected apprenticeship vacancies in the local newspaper or newsletter;
- (ii) Cause to be announced at the local union meeting the openings available.

2. For entry-level apprenticeship programs, the local committee shall disseminate notice of apprenticeship opportunities at least 30 days prior to the earliest date of application in the following manner:

a. Internal Notification

- (i) The employer or area JAC will notify employees that it will be accepting apprentice applications for specific skilled crafts.
- (ii) Notify responsible local minority community groups (NAACP, Urban League, women's groups, etc.) of expected apprenticeship vacancies, requesting their cooperation and assistance in referring qualified minority employees.
- (iii) Solicit referrals from minority and women employees of the facility.

b. External Notification

This is to be done when internal notification fails to produce the desired number of applicants.

- (i) Notify all local State employment service offices, local schools and BAT/SAC representatives in the recruiting area of the facility or area program.
- (ii) Advertise existing or expected apprenticeship vacancies in local newspapers, particularly those circulated in the minority community as well as the general area in which the local program operates.

- (iii) The program sponsors will include the phrase "an Equal Opportunity Employer" in clearly distinguishable type in all of its advertisements for job applicants, including apprenticeship.
- (iv) Notify responsible local minority community groups (NAACP, Urban League, women's groups, etc.) on expected apprenticeship vacancies, requesting their cooperation and assistance in referring qualified minority applicants.
- (v) The local committee will accept applicants for apprenticeship who have successfully completed training and pretesting experience in a locally sponsored bona fide Manpower Development and Training Act contract program that has for its purpose the elevation of trainees to meet the minimum entry level qualifications of the committee for apprenticeship.

B. Internal Communication of the Graphic Arts International Union Equal Opportunity Policy

1. Copies of this affirmative action program will be distributed to all labor and management personnel assigned equal employment opportunity responsibility.
2. The Graphic Arts International Union will establish an effective system of feedback and control of information to insure the strict application of its equal employment opportunity policy.
3. The union's equal opportunity policy and projects will be publicized in labor publications and management newsletters.
4. Posters supplied by the U.S. Department of Labor entitled "Equal Employment Opportunity Is the Law" and U.S. Standard Form 38, "Notice of Nondiscrimination in Employment," will be posted on all local facility bulletin boards.
5. A part of training classes for supervisory personnel will include a scheduled portion of the program devoted to familiarize those in attendance with the employer's equal employment opportunity policy and affirmative action program. This will be done on a regular basis.

6. The employer will communicate to journeymen craft workers the terms and purpose of the affirmative action program and solicit their cooperation and assistance in achieving our goals.

C. Other Affirmative Actions

1. Participation by local facility labor-management personnel in the employment service annual workshops conducted in the facility's recruiting area.
2. Cooperate with and assist local boards of education and vocational school representatives to develop programs necessary to prepare and qualify students for entry into the local apprenticeship program.
3. Other actions deemed necessary to accomplish the desired results of the affirmative action program.

VI. SELECTION OF APPRENTICES

(Programs Employing Five or More Apprentices)

With regard to the selection of entry-level apprentices, all shops may continue to select apprentices under the GAIU selection method except as provided below until such time as experience demonstrates an adjustment to this method is required to assure the entry of minority applicants into the local joint apprenticeship program to meet established goals.

With regard to the selection of apprentices for the upgrading of women already in the industry to Journeyman I status, all apprentice openings shall first be offered to women already in the plant and then within the local before being offered to entry-level applicants.

A. Underutilization Studies

With regard to upgrading to Journeyman I status, each local apprenticeship program will include as part of its affirmative action plan an analysis and comparison of the female composition in the employer's work force by classification, rates, and skills with the male composition of the employer's work force by classification, rates, and skills. For entry-level programs, each apprenticeship program shall include an analysis and comparison of minority composition in the employer's work force with the minority composition and availability in the labor market area in which the employer's shop is located.

B. Goals and Timetables

If the analysis of the ratio of men to women by classification, rates, and skills or the local labor market indicates underutilization of women in skilled classifications or of minorities in the apprenticeship program, the employer, together with the local committee, shall establish appropriate goals and a timetable designating the period expected to achieve the established goals. For purposes of the regulations, goals are described as "the results which can be reasonably expected from the sponsor's good faith efforts to make its affirmative action program work."

The following data summary form will assist shop and area committees to determine deficiencies, if any, in the employment of women and minorities under their local apprenticeship program and for establishing goals and timetables, if required. Goals shall be established for a 1-year period.

C. See data summary form for entry-level program.

D. See data summary form for upgrading apprentice program.

E. Appeals Procedure

Apprentices adjudged unqualified by the local committee, or who are denied all or part of the credit toward an apprenticeship period they believe they are entitled to, may appeal any adverse decision of the local committee directly to the National Committee. This Committee shall have the authority to inspect, review, and request the applicant's records as maintained by the local committee and to reinstate the applicant, grant additional credit, or take whatever other action is necessary to effectuate the policies contained in this program. The applicant shall not make use of any other remedy, either administrative or judicial, until 30 days have elapsed following filing of the appeal.

All applicants shall be advised of their right to appeal under this section by the local committee at the time of any adverse action.

F. Recordkeeping

All records, including the application for employment, the apprentice application evaluation form tests, school transcripts, employment references, and interview notes will be retained for a minimum of 5 years, as required by the regulations. In addition, a chronological list will be maintained showing the date, name,

address, sex, and, whenever possible, minority identification, i.e., Negro, Oriental, American Indian, or Spanish-surnamed American, of every applicant, whether hired or not, for at least 5 years from the date of application.

DATA SUMMARY FORM FOR ENTRY - LEVEL PROGRAM

A. Name of Program

1. Sponsor's Name _____
Address _____
2. (a) Total Journeymen Employed _____
(b) Total Apprentices Employed _____
3. Geographic Area Covered by Program _____

B. Standard Metropolitan Statistical Area Used For Population and Labor Force Data

1. (a) Percent of minorities in labor force _____
(b) Percent of minority population _____
2. Percent of minority apprentices in sponsor's program _____
3. Percent of minority journeymen employed under sponsor's program _____
4. Percent of each year's accessions which should be minority _____
5. Number of apprentices to be indentured in the next _____ months _____
6. Based on the above data, the number of minority applicants who will be reasonably expected to be employed as apprentices in the next _____ months _____

DATA SUMMARY FORM FOR UPGRADING
APPRENTICE PROGRAM

A. Name of Program

1. Sponsor's Name _____

Address _____

2. (a) Total Journeymen I Employed _____
(b) Total Journeymen I Apprentices Employed _____
(c) Total Journeymen II Employed _____
(d) Total Journeymen II Apprentices Employed _____
Total Work Force in Shop _____

B. Relationship of Male to Female Employees

1. (a) Number of Female Journeymen I Employees _____
(b) Number of Female Journeymen I Apprentices _____
(c) Number of Male Journeymen II Employees _____
(d) Number of Male Journeymen II Apprentices _____
(e) Percentage of Women in Journeyman I
Work Force _____
(f) Percentage of Women in Journeyman II
Work Force _____
(g) Percentage of Women in Journeyman I
Apprenticeship Program _____

2. Number of: (a) Male _____
(b) Female _____

apprentices the joint apprenticeship or shop
apprenticeship committee will indenture in
the next _____ months

3. Based on the above data, the number of
female applicants the apprenticeship committee
will be reasonably expected to employ as
Journeymen I apprentices in the
next _____ months _____

ADDENDUM 5

Credit for Upgrading to the Journeyman I Classification

A Journeyman I is a skilled craft worker with ability and training in three separate binding and finishing operations. The classification represents the top professional level within this segment of the industry.

Journeyman I skills are developed during the apprenticeship training period. Sex is not a bona fide occupational qualification to become a Journeyman I. The skills are not exclusively within the ability of either men or women. Therefore, the opportunity to become a Journeyman I is open to all applicants, regardless of sex.

Entry-level applicants will receive all their training for Journeyman I through the apprenticeship program. Employees already within the industry may have developed relevant work-related experience toward becoming a Journeyman I. In many cases, employees in the Journeyman II classification are able to do Journeyman I work on one or two operations in the plant. Such experience should be credited toward the Journeyman I apprenticeship period since these apprentices already know what other apprentices need to learn.

The amount of credit acquired will vary, depending upon the type of plant, the specific machines worked on, the functions performed, and the length of service on the machine. The specific amounts of credit granted are obviously best decided by each local committee on an individual basis.

However, certain minimum standards of credit are applicable to all shops within the International's jurisdiction. All Journeymen II applicants should automatically be credited with the 2 years spent training for an apprentice for Journeyman II classification.

In addition to this 2 years' credit, the following credit should be granted based upon:

- a. Type of machine
- b. Difficulty and variety of operations on the machine
- c. Number of years of service on the machine

Each local committee should grant the applicant such credit unless, on the basis of an independent, individual evaluation, the applicant is deemed entitled to either more or less credit. All deviations from the credit standards must be documented and the records retained by the committee pursuant to addendum 4.

The credit is cumulative. Thus, if an applicant is entitled to 2 months' credit on a case-making machine, 4 months on a perforator, and 4 months on a folding machine, the total credit due the applicant is 2 years and 10 months (2 years' credit for Journeyman II apprenticeship and 10 months' credit for the experience in the three operations). In the event that total credit equals the apprenticeship period for Journeyman I, the applicant must serve no more than 6 months at the highest Journeyman I apprentice rate as a probationary period.

The number of months served shall be rounded to the next lowest amount for purposes of determining credit. For example, credit for gathering machines is given on the basis of 6-month intervals. If an applicant had served as a feeder for 1 year and 4 months, he or she would receive credit for only 1 year.

CREDIT STANDARDS

<u>Type of Machine</u>	<u>Years of Service On Machine</u>	<u>Minimum Credit</u>
Case Making	1 Year	2 Months
	2 Years	4 Months
	3 Years	6 Months
	4 Years	9 Months
	5 or more Years	1 Year
Casing In, Building In	Same	Same
Cast Stamping	Same	Same
Backing-Headbanding Lining Machines	Same	Same
Folding Machines	Same	Same
Gathering and Inserting Machines (w/o Trimmer)	6 Months	1 Month
	1 Year	3 Months
	1-½ Years	4 Months
	2 Years	5 Months
	2-½ Years	6 Months
	3 Years	8 Months
	3-½ Years	9 Months
	4 Years	10 Months
	4-½ Years	11 Months
	5 or more Years	1 Year
Gathering and Inserting Machines (w/Trimmer)	1 Year	2 Months
	2 Years	4 Months
	3 Years	6 Months
	4 Years	8 Months
	5 or more Years	10 Months

Gluing Machine	1 Year	2 Months
	2 Years	4 Months
	3 Years	6 Months
	4 Years	9 Months
	5 or more Years	1 Year
Indexing Machines	Same	Same
Office and Business Form Operations	6 Months	2 Months
	1 Year	4 Months
	1-½ Years	5 Months
	2 Years	6 Months
	2-½ Years	8 Months
	3 Years	10 Months
	3-½ Years	1 Year
	4 Years	1 Year, 2 Months
	4-½ Years	1 Year, 4 Months
	5 or more Years	1 Year, 6 Months

U.S. DEPARTMENT OF LABOR • MANPOWER ADMINISTRATION Bureau of Apprenticeship and Training		CHECK APPROPRIATE BOX ☐ Vietnam Era Veteran ☐ Other Veteran ☐ Non-Veteran	
APPRENTICESHIP AGREEMENT Between Apprentice and Joint Apprenticeship Committee		SOCIAL SECURITY NUMBER 	
THIS AGREEMENT, entered into this day of 19..... between the parties to (Name of local apprenticeship standards) represented by the Joint Apprenticeship Committee, hereinafter referred to as the COMMITTEE, and (Name of apprentice) born (Month, Day, Year) hereinafter referred to as the APPRENTICE, and (if a minor) (Name of parent or guardian) hereinafter referred to as his GUARDIAN.			
WITNESSETH THAT: The Committee agrees to be responsible for the selection, placement and training of said apprentice in the trade of as work is available, and in consideration said apprentice agrees diligently and faithfully to perform the work of said trade during the period of apprenticeship, in accordance with the regulations of the Committee. The apprenticeship standards referred to herein are hereby incorporated in and made a part of this agreement.			
TERM OF APPRENTICESHIP	PROBATIONARY PERIOD	CREDIT FOR PREVIOUS TRADE EXPERIENCE	TERM REMAINING
OTHER CONDITIONS			
This agreement may be terminated by mutual consent of the signatory parties, upon proper notification to the registration agency.			
SIGNATURE OF APPRENTICE		TO BE COMPLETED BY THE APPRENTICE	
ADDRESS (Number, Street, City, State, ZIP Code)		Check One: ☐ MALE ☐ FEMALE	
		RACE/ETHNIC GROUP: (Check one)	
PARENT OR GUARDIAN (Signature)		☐ CAUCASIAN/WHITE ☐ INFORMATION NOT AVAILABLE	
		☐ NEGRO/BLACK ☐ NOT ELSEWHERE CLASSIFIED	
SIGNATURE (Joint Apprenticeship Committee, Chairman)		☐ ORIENTAL ☐ SPANISH AMERICAN	
		☐ AMERICAN INDIAN	
SIGNATURE (Joint Apprenticeship Committee, Secretary)		HIGHEST EDUCATION LEVEL: (Check one)	
		☐ 8th GRADE OR LESS ☐ 12th GRADE OR MORE	
NAME OF REGISTRATION AGENCY		☐ 9th GRADE OR MORE	
DATE (Month, Day, Year)		SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL	

APPRENTICESHIP AGREEMENT
Between Apprentice and Employer

CHECK APPROPRIATE BOX

- ☐ Vietnam Era Veteran
☐ Other Veteran
☐ Non-Veteran

SOCIAL SECURITY NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

The employer and apprentice whose signatures appear below agree to these terms of apprenticeship:

The employer agrees to the nondiscriminatory selection and training of apprentices in accordance with the Equal Opportunity Standards stated in Section 30.3 of Title 29, Code of Federal Regulations, Part 30; and in accordance with the terms and conditions of the (*Name of Apprenticeship Standards*) which are made a part of this agreement.

The apprentice agrees to apply himself diligently and faithfully to learning the trade in accordance with this agreement.

TRADE	TERM OF APPRENTICESHIP (Hours or Years)	PROBATIONARY PERIOD
CREDIT FOR PREVIOUS EXPERIENCE	TERM REMAINING	DATE THE APPRENTICESHIP BEGINS

This agreement may be terminated by mutual consent of the parties, citing cause(s), with notification to the Registration Agency.

NAME OF APPRENTICE (Type or Print)		TO BE COMPLETED BY THE APPRENTICE	
SIGNATURE OF APPRENTICE		DATE OF BIRTH (Month, Day, Year)	
ADDRESS		CHECK APPROPRIATE BOX ☐ MALE ☐ FEMALE	
PARENT OR GUARDIAN		RACE/ETHNIC GROUP: (Check one)	
NAME OF EMPLOYER (Company)		☐ CAUCASIAN/WHITE ☐ INFORMATION NOT AVAILABLE ☐ NEGRO/BLACK ☐ NOT ELSEWHERE CLASSIFIED ☐ ORIENTAL ☐ SPANISH AMERICAN ☐ AMERICAN INDIAN	
ADDRESS		HIGHEST EDUCATION LEVEL (Check one)	
		☐ 6TH GRADE OR LESS ☐ 8TH GRADE OR MORE ☐ 10TH GRADE OR MORE	
SIGNATURE OF AUTHORIZED OFFICIAL			
APPROVED BY (Joint Apprenticeship Committee)			
SIGNATURE OF CHAIRMAN OR SECRETARY			DATE
REGISTERED BY (Name of Registration Agency)			
SIGNATURE OF AUTHORIZED OFFICIAL			DATE

REGIONAL OFFICES

BUREAU OF APPRENTICESHIP AND TRAINING

Location	States Served	
Region I John F. Kennedy Federal Bldg., Room 1001 Government Center Boston, Mass. 02203	Connecticut Maine Massachusetts	New Hampshire Rhode Island Vermont
Region II 1515 Broadway, Room 3731 New York, N.Y. 10036	New Jersey New York	Puerto Rico Virgin Islands
Region III P.O. Box 8796 Philadelphia, Pa. 19101	Delaware Maryland Pennsylvania	Virginia West Virginia
Region IV 1371 Peachtree Street, N.E., Room 700 Atlanta, Ga. 30309	Alabama Florida Georgia Kentucky	Mississippi North Carolina South Carolina Tennessee
Region V Federal Bldg. 230 South Dearborn Street Chicago, Ill. 60604	Illinois Indiana Michigan	Minnesota Ohio Wisconsin
Region VI 1114 Commerce Street, Room 1814 Dallas, Tex. 75202	Arkansas Louisiana New Mexico	Oklahoma Texas
Region VII Federal Office Bldg., Room 1100 911 Walnut Street Kansas City, Mo. 64106	Iowa Kansas	Missouri Nebraska
Region VIII Federal Bldg., Room 16440 1961 Stout Street Denver, Colo. 80202	Colorado Montana North Dakota	South Dakota Utah Wyoming
Region IX 450 Golden Gate Avenue, Room 9008 P.O. Box 36017 San Francisco, Calif. 94102	Arizona California	Hawaii Nevada
Region X Arcade Plaza Bldg., Room 2055 1321 Second Avenue Seattle, Wash. 98101	Alaska Idaho	Oregon Washington

STATE AND TERRITORIAL APPRENTICESHIP AGENCIES

Apprenticeship Services
Department of Economic Security
P.O. Box 8123
Phoenix, Ariz. 85006

Division of Apprenticeship Standards
Department of Industrial Relations
455 Golden Gate Ave.
San Francisco, Calif. 94102

Colorado Apprenticeship Council
200 E. Ninth Ave., Rm. 216
Denver, Colo. 80203

Apprentice Training Division
Department of Labor
200 Folly Brook Blvd.
Wethersfield, Conn. 06109

Delaware State Apprenticeship
and Training Council
Department of Labor and Industry
818 N. Union St.
Wilmington, Del. 19806

District of Columbia
Apprenticeship Council
1100 Vermont Ave., NW, Rm. 800
Washington, D.C. 20212

Bureau of Apprenticeship
Florida Dept. of Commerce
1321 Executive Center Drive
Tallahassee, Fla. 32301

Apprenticeship Division
Department of Labor and
Industrial Relations
825 Milliani St.
Honolulu, Hawaii 96813

Kansas Apprenticeship Council ^{1/}
Apprenticeship Training Division
Department of Labor
401 Topeka Blvd.
Topeka, Kans. 66603

Kentucky State Apprenticeship Council
Department of Labor
Capitol Plaza Tower
Frankfort, Ky. 40601

Apprenticeship Division
Department of Labor
1001 Land and Natural Resources Bldg.
P.O. Box 44083
Baton Rouge, La. 70804

Maine Apprenticeship Council
Department of Labor and Industry
State Office Bldg.
Augusta, Maine 04330

Maryland Apprenticeship and Training
Council
Department of Labor and Industry
203 E. Baltimore St.
Baltimore, Md. 21202

Division of Apprenticeship Training
Department of Labor and Industries
State Office Bldg.
Government Center
Boston, Mass. 02202

Division of Voluntary Apprenticeship
Department of Labor and Industry
Space Center Bldg. - 5th Floor
444 Lafayette Road
St. Paul, Minn. 55101

Montana State Apprenticeship Council
Department of Labor and Industry
Helena, Mont. 59601

Nevada Apprenticeship Council
Department of Labor
Capitol Bldg.
Carson City, Nev. 89701

New Hampshire Apprenticeship Council
Department of Labor
1 Pillsbury St.
Concord, N.H. 03301

New Mexico Apprenticeship Council
Labor and Industrial Commission
1010 National Building
505 Marquette St., NW
Albuquerque, N.M. 87101

New York State Apprenticeship Council
Bureau of Apprentice Training
Department of Labor
The Campus Bldg. #12
Albany, N.Y. 12226

Division of Apprenticeship Training
Department of Labor
Raleigh, N.C. 27602

Ohio State Apprenticeship Council
Department of Industrial Relations
2323 West Fifth Ave. - Room 250
Columbus, Ohio 43204

Oregon State Apprenticeship and
Training Council
Bureau of Labor
Labor & Industries Bldg., Rm. 115
Salem, Ore. 97310

Pennsylvania Apprenticeship and
Training Council
Department of Labor and Industry
Harrisburg, Pa. 17120

Apprenticeship Division
Department of Labor
414 Barbours Ave.
Hato Rey, P.R. 00917

Rhode Island Apprenticeship Council
Department of Labor
235 Promenade St.
Providence, R.I. 02906

Utah State Apprenticeship Council
Industrial Commission
431 S. Sixth East
Salt Lake City, Utah 84102

Vermont Apprenticeship Council
Department of Industrial Relations
State Office Bldg.
Montpelier, Vt. 05602

Division of Apprenticeship Training
Department of Labor and Industry
9th St. Office Bldg.
Richmond, Va. 23214

Washington Apprenticeship Council
Department of Labor and Industries
318 E. 4th Ave.
Olympia, Wash. 98504

Division of Apprenticeship Training
Box 2208
Madison, Wis. 53701

Virgin Islands Apprenticeship Council
Department of Labor
Christiansted, St. Croix, V.I. 00820

^{1/} All agencies, with the exception of Kansas, operate under apprenticeship and/or training laws enacted by the legislature. The agency in Kansas functions under executive order of the Governor.